

## EXPLANATION OF PLATE.

Fig. 1. Egg.

1. 2. Egg-mass.
3. Longitudinal section of stem showing position of egg at base of old bud scale.
4. First instar.
5. Second instar.
6. Third instar.
7. Fourth instar.
8. Fifth instar.
9. Adult female.
10. Adult male.

## NOTE ON THE SPECIES OF THE GENUS ACROCERA.

BY CHARLES W. JOHNSON,  
Boston Society of National History, Boston, Mass.

Most of the species of this genus have remained practically unknown since they were described. This is undoubtedly due to poor description on the one hand and to the scarcity of material on the other. Since obtaining my first specimen in 1895, only seventeen additional specimens have come under my observation, representing perhaps seven species. The variable and vestigial character of the venation offers an attractive field for study if only sufficient material could be obtained. The species, so far as known, parasitize the ground spiders of the genera *Lycosa* and *Amaurobius*, and no doubt a number could be obtained by raising the various species of spiders of these genera. The late Dr. T. H. Montgomery in conducting some studies on the Lycosids, bred a number of *Acrocera fasciata*, and I remember he said that he could detect those which were parasitized, long before there was any other indication, by their weaker and more poorly constructed webs, the parasite evidently affecting the functions of the spinneret.

The brief Latin descriptions by Westwood (Trans. Ent. Soc., London, V, 91, 1848), are very trying, and the positive identification of some of his species seems almost impossible with so little material, especially from the southern states—three of his species being described from Georgia. I can therefore present only the following provisional table and notes, trusting that they may lead to a further study of this interesting genus:

## TABLE OF SPECIES.

Dorsum of the thorax marked with yellow.....	2
Dorsum of the thorax entirely black.....	3
2. Thorax with two elongated spots or stripes (Wash.).....	<i>liturata</i> Will.
Thorax with two cuneiform markings (N. Y., N. H.).....	<i>subfasciata</i> Westw.
3. Venation typical (N. Y., Mass., Me.).....	<i>bullata</i> Westw.
Venation not typical.....	4
4. Second longitudinal vein wanting.....	5
Second longitudinal vein rudimentary, present only at the apex (D. C., Pa., Que., Mass.).....	<i>bimaculata</i> Loew
5. Third longitudinal vein branched and the anterior cross vein present.....	6
Third longitudinal vein with the branch and the anterior cross vein obsolete or wanting.....	7
6. Abdomen with a complete uninterrupted fascia on all the segments (Ga., Pa., Ill., Mass.).....	<i>fasciata</i> Wied.
Abdomen with irregular maculation on the third and fourth segments (Ga., Conn., Vt., N. H.).....	<i>nigrina</i> Westw.
Abdomen yellow, except at the very base; veins extremely light (Wis., Me.)	<i>obsoleta</i> V. d. Wulp
7. Abdomen black, wings fuscous at the base (Ga.).....	<i>fumipennis</i> Westw.
Abdomen yellow, base of the segments black; wings hyaline (Ga., Md., Pa., Wis.).....	<i>unguiculata</i> Westw.

*Aerocera subfasciata* Westwood. Figure 1.

A specimen collected by J. C. Bridwell at Pelham, N. H., September 8, 1905, agrees well with Westwood's description, except that the yellow cuneiform markings on each side of the anterior part of the thorax extend in two very narrow subdorsal lines to the base of the scutellum, a likely variation, apparently resembling *A. liturata* Will., which may prove to be an extreme variation. The abdomen is yellow with dorsal and lateral spots of black, those on the second segment narrowly connected with those on the sides. Venation typical. As Westwood lays considerable stress on obsolete veins and Williston does not mention the venation of *A. liturata*, I take it for granted that both are typical in this respect.

*Aerocera bulla* Westwood.

Again I take it for granted that Westwood's species has typical venation. A specimen collected at Bailey's Island, Me., August 20, 1915, by Dr. G. M. Allen agrees well with the description. The specimen referred to has very light yellow markings, those on the second segment consisting of two widely separated triangular spots on the posterior margin; the third segment

similarly marked, except that the spots are quadrate and very narrowly separated at the posterior margin; fourth segment largely yellow, with a dorsal triangle and small triangles at the anterior angles, black; venter black, with narrow white posterior margins on all the segments. Legs a very light yellow, last joint of the tarsi and the claw black, halteres yellow. Length, 4.5 mm.



Fig. 1



Fig. 2



Fig. 3



Fig. 4

A second specimen collected by Stanley W. Bromley, at Southbridge, Mass., has dark yellow markings, the two widely separated spots on the second segment are quadrate, those on the third triangular and narrowly connected, and those on the fourth quadrate and also narrowly connected at the posterior margin. The wings and squamae are a slightly darker hyaline than the Maine specimen. It is also more robust but measures about the same in length owing to a slight contraction of the abdomen.

A third specimen in the Museum of Comparative Zoölogy, from Maine (Osten Sacken), has the markings on the abdomen reduced in size, those on the second segment consisting of two small spots, while those on the third are somewhat larger and widely separated.

*Acrocera bimaculata* Loew. Figure 2.

This species is most readily recognized by its rudimentary second longitudinal vein, as the markings on the abdomen are somewhat variable. A specimen from Levis Co., Quebec (G. Chagnon), agrees with the type in having two large maculations on the posterior margin of the fourth segment. A specimen collected by Mr. C. A. Voelker at Clifton, Delaware Co., Pa., has two additional

small spots on the posterior margin of the third segment. A third specimen, collected by Stanley W. Bromley at Southbridge, Mass., June 25, 1915, represents a small male, with only a margin of yellow at the posterior angle of the fourth segment. The wings are light hyaline. Length, 4 to 6 mm.

*Acrocera fasciata* Wiedemann. Figure 3.

This is the best known species. It has been bred from *Lycos ocreata* Hentz (*L. stonei* Montg.) near Philadelphia, Pa., by Dr. T. H. Montgomery (PSYCHE, XI, 17, 1904) and by Mr. J. H. Emerton from *Amaurbius sylvestris* at Waltham (PSYCHE, V, 404, 1890). A specimen collected by Mr. C. A. Frost at Framingham, June 9, 1915, represents a small male, 3 mm. in length. The scutellum is black except the apex, and the wings are a clear not a brownish hyaline. The uninterrupted bands on all of the segments readily distinguish the species. The female measures 5 mm. and has the scutellum entirely yellow. The wing figured shows an adventitious cross vein between the forks of the third vein, present on the left wing of one specimen.

*Acrocera nigrina* Westwood.

I am referring to this species four specimens which show some variation in the abdominal markings but no more than would probably exist in a large series. One has two large spots on the third segment, very narrowly connected on the posterior margin. The other three have small irregular spots. In all of the specimens the fourth segment is largely light yellow. Legs yellow, femora and tibiæ obscurely brown on the middle third; squamæ margined with brown; wings pale brown, the second longitudinal vein wanting, a character probably overlooked by Westwood. The specimens measure from 4 to 5 mm.

These four examples are from the following localities: Darien, Conn., June 12, and Bennington, Vt., June 18, 1915 (C. W. Johnson); Shirley Hill, N. H., June 17, 1911 (F. W. Grigg); Quebec (Provancher) Museum of Comparative Zoölogy. The latter has the usual abdominal markings, but the second longitudinal vein is indicated by a short stub at the base and by two short, interrupted dashes on one wing and one on the other midway between the base and where the apex should be. The entire absence of

yellow markings on the second segment would indicate that it belongs here rather than to *A. bulla*, while the great amount of yellow on both the third and fourth segments bars it from *A. bimaculata*. This characteristic suggests, however, that *bulla*, *bimaculata* and *nigrina* may possibly represent extreme variations of one species, but much more material would be necessary to prove this.

*Acrocera obsoleta* Van der Wulp.

*A. obsoleta* V. d. Wulp. Tijdschr. v. Ent., II, 2nd. ser., p. 139 pl. 3, f. 17, 1867.

A specimen which I am referring to this species was taken by Mr. A. P. Morse at Orona, Me., August 5, 1915. The abdomen is bright yellow except for a narrow basal margin, a dorsal triangle at the base of the third segment, and a small anal spot of black; venter yellow, segment with narrow, whitish, posterior margins and lateral spots of black. Wings whitish hyaline, with very pale veins, giving them an obsolete appearance. Length, 5.5.

Van der Wulp in figuring the wing indicates all but the auxiliary and first longitudinal veins by dotted lines; "alarum nervis, præter nervos longitudinales duos priores obsoletissimis; furca in apice petiolo breviori," would, however, indicate that they were present and all are shown except the second longitudinal vein. The branch of the third longitudinal vein and anterior cross vein are the first to disappear as in the case of *A. unguiculata*.

*Acrocera unguiculata* Westwood. Figure 4.

I am referring to this species two specimens which have two important characters in common, *i. e.*, the branch of the third vein and the anterior cross vein are wanting. The smaller specimen which was taken at Fort Washington, Md., May 26, 1895, measures 3 mm. in length. The third segment has a large, yellow, transverse spot on the posterior half, not reaching the lateral margins; the fourth segment is yellow except for a narrow anterior margin. Wings whitish hyaline. The larger specimen measuring 5 mm., was collected at Lehigh Gap, Pa., July 10, 1897 (H. L. Viereck). The yellow on the abdomen covers all of the fourth, all but a narrow anterior margin on the third, and the posterior dorsal fourth, of the second segment. The wings are brownish hyaline. The abdominal markings agree fairly well with Westwood's description

and "alarum venis fere obsoletis" would certainly apply to the venation. Another feature common to both specimens is the entirely light yellow tarsi, only the claws being black. All of the other species have the terminal joint blackish.

*Acrocera fumipennis* Westwood.

This may prove to be only a dark form of the preceding species. The entire absence of yellow markings in the description and the statement that the base of the wings is smoky brown, cannot however apply to those I have seen with obsolete venation.

A NEW BOG-INHABITING VARIETY OF *FORMICA*  
*FUSCA* L.

BY WILLIAM MORTON WHEELER.

Several entomologists have recently called attention to the ants inhabiting peat-bogs in Northern Europe. Nylander, as long ago as 1846, described a peculiar, shining black *Formica* as *F. picea* from Sphagnum bogs in Finland<sup>1</sup> and this species has since been collected in Germany, Denmark, England, Russia and Siberia but has been usually referred to *F. gagates* Latreille, a form described from France. Emery<sup>2</sup> first definitely recognized the two forms as distinct, though he regarded both as subspecies of *fusca*. He gave the distribution of *gagates* as Southern Europe and Asia Minor and that of *picea* as Northern Europe and Asia as far as China, whence it had been recorded by Forel under the name of *flechneri*. Forel has since described a var. *formosæ* of *picea* from the Island of Formosa.<sup>3</sup>

In 1913 Donisthorpe found *picea* in England nesting in Sphagnum,<sup>4</sup> in 1914 Adlerz found it in the same situations in Sweden,<sup>5</sup> and during the same year and 1915 Bönner published two inter-

<sup>1</sup> Adnotationes in Monographiam Formicarum Borealium Europae, Act. Soc. Sc. Fennicæ, 2, 1846, pp. 875-994 and Additamentum Adnotationum in Monogr. Form. Bor. Eur. *Ibid.*, pp. 1048-1062.

<sup>2</sup> Beiträge zur Monographie der Formiciden des paläarktischen Faunengebietes, VII, Deutsch Ent. Zeitschr. 1909, pp. 179-204, 16 figs.

<sup>3</sup> H. Sauter's Formosa-Ausbeute: Formicidæ II. Arch. f. Naturg. 79, 1913, pp. 183-202.

<sup>4</sup> Myrmecophilous Notes for 1912. Ent Record 25, 1913, pp. 61-68, 89-97.

<sup>5</sup> *Formica fusca picea* Nyl. en Torfmossarnas Myra. Ark. f. Zool. S, 1914 p. 1.